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ABSTRACT

This competency-based curriculum guide is designed to assist the teacher in the organization and management of the industrial arts program. It includes student performance objectives which detail the responsibilities of the teacher and the students. The competencies described in the document represent individual learning units in each of the following subject areas: automechanics, electronics, metals, residential planning, technical drawing, woods, and graphic arts. The authors suggest that these competency units described can be a basis in program evaluation which can assist in more effective planning and in maintaining an up-to-date educational evaluation of the progress of each student enrolled. In each area, the competencies are listed followed by the specification of the tasks involved. Each section also explains at what educational level the various competencies should be demonstrated and at what point students should be certified competent. Two other curriculum guides accompany this document and include performance objectives for courses in health occupations education (CE 019 076) and metals (CE 019 077). (CT)

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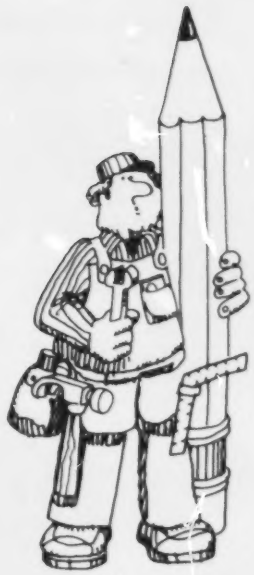
CAREER AND VOCATIONAL EDUCATION

INDUSTRIAL ARTS COMPETENCIES



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1978

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INDUSTRIAL ARTS COMPETENCIES

INTRODUCTION

The industrial arts departments of the San Mateo Union High School District have developed competencies in the following subjects, in compliance with the Board-adopted goal of competency-based education in all curriculum areas:

Automechanics
Electronics
Metals
Residential Planning
Technical Drawing
Woods
Graphic Arts

These competency-based industrial arts programs are designed to assist the teachers in the organization and management of the programs. They include measurable objectives which detail the responsibilities of the teacher and the students. The competencies described in this document represent individual learning units in each subject area. The competency units described will be a basis in program evaluation which will assist in more effective planning and in maintaining an up-to-date educational evaluation of the progress of each student enrolled.

Full credit must be given to the 32 industrial arts teachers who so willingly devoted many hours of time and effort to the development of realistic, useable competency sets.

Competency Task Force Chairmen:

Tullio Bertini - Electronics
Charles Borrecco - Automechanics
Russell Daniels - Metals
Richard Laverty - Graphic Arts
Carl Leijon - Woods
Richard Schotzko - Technical Drawing
Residential Planning

Kurt Krueger, Program Evaluator
Career & Vocational Education

AUTOMECHANICS

SPECIFICATIONS FOR CERTIFYING AUTOMECHANICS COMPETENCIES

Students who have successfully completed Automechanics 1-2 will be able to demonstrate competence in 9 of the following areas. Students who have successfully completed Automechanics 1-4 will be able to demonstrate competence in 13 of the following areas. Students who complete fewer than four semesters of Automechanics will be able to demonstrate competence in proportionately fewer areas. Students may be certified competent after completing instructional units and activity projects or by completing the tasks listed within the specification statements following such competency statements.

COMPETENCY 1. Demonstrate Safe Work Practices

SPECIFICATION

During each practical demonstration of a tune-up or servicing of one of the power train or chassis systems, the student should follow a systematic process of inspection, disassembly, cleaning, testing of components, replacement of defective parts as necessary and reassembling the components to manufacturers' specifications.

The following elements should also be observed:

- Guards, shields, and safety glasses will be used as needed.
- The choice of the types of wrenches, sockets and special devices is consistent with industry practices.
- The student will remove loose clothing and restrain long hair.
- Student selection and use of test instruments, micrometers, and hand and power tools will be consistent with industry standards.
- Demonstration of proper procedures for using lifting equipment.

COMPETENCY 2. Read, Interpret and Apply Service Manual Specifications to the Work Being Performed

SPECIFICATION

Given an assignment to do a minor tune-up on an engine with ignition points, the student will be able to use a service manual, for that year, to list the following items, with 100% accuracy, within 10 minutes.

- Spark plug number and gap
- Ignition point settings
- Point dwell
- Engine idle speed
- Ignition timing advance

COMPETENCY 3. Perform an Engine Tune-Up

SPECIFICATION Given the necessary specifications manuals, test equipment, tools, and replacement parts for a recent automobile engine, the student will be able to perform the following tune-up procedures within 90% accuracy of the manufacturer's specifications:

- Test compression
- Replace needed ignition parts
- Set dwell
- Set timing
- Set idle speed

COMPETENCY 4. Service Drum Type Hydraulic Brake Systems

SPECIFICATION Given an operational brake system, the student will be able to:

- Remove brake drum
- Inspect and measure brake drum with a micrometer
- Replace brake shoes
- Inspect, repair or replace cylinders
- Reassemble the unit
- Torque wheel bearings
- Adjust brake shoe clearance
- Bleed brake system

COMPETENCY 5. Service Disc Type Hydraulic Brake Systems

SPECIFICATION Given a disc brake system, the student will be able to:

- Remove disc brake caliper assembly
- Inspect rotor
- Inspect system for leaks
- Reassemble unit
- Torque wheel bearings
- Bleed brake system

COMPETENCY 6. Power Train Service

SPECIFICATION The student will be able to:

- Inspect an automotive drive train for oil leaks and fluid levels
- Remove an automatic transmission oil pan and replace filter, gasket, pan and fluid
- Inspect universal joints

COMPETENCY 7. Service Electrical Systems

SPECIFICATION The student will be able to use maintenance manuals, tools and testing equipment to perform the following tasks:

- Diagnose turn signal problems
- Replace fuses, bulbs, turn signal flasher and emergency flasher unit as necessary
- Use headlight aimer to adjust two-unit or four-unit headlight sets to vehicle code specifications

COMPETENCY 8. Service Fuel Systems

SPECIFICATION The student will be able to describe the components of a typical automobile fuel system and to troubleshoot the system for malfunctions.

COMPETENCY 9. Service Cooling Systems

SPECIFICATION The student will be able to change coolant, inspect cooling system for leaks, test fan belts and pressure cap.

COMPETENCY 10. Service Air Conditioning Systems

SPECIFICATION Given an automobile which is equipped with air conditioning, the student will be able to describe the components of the system and how it works to produce cooled air. The student will also be able to inspect the system for leaks or malfunctions, and check the freon level.

COMPETENCY 11. Service Suspension and Steering Systems

SPECIFICATION The student will be able to inspect the suspension systems of an automobile and to diagnose shock absorber replacement, front end alignment, steering linkage replacement, ball joint replacement and tire replacement.

The student will further be able to demonstrate how to replace shock absorbers and lubricate wheel bearings, steering linkage, ball joints and universal joints.

COMPETENCY 12. Service Tires

SPECIFICATION The student will be able to use a tire machine to dismount a tire, inspect the tire for breaks or punctures, repair the tire, replace it on the wheel and inflate it to proper pressure.

The student will be able to use a wheel balancer to balance the wheel and tire for use at freeway speeds.

COMPETENCY 13. Service Emission Control Systems

SPECIFICATION

Given an operational automobile, the student will be able to inspect, test and service or replace emission control systems components. Emission control systems may include:

- Crankcase ventilation cap, hoses and PCV valve
- Exhaust air injection system tubing, filter, and air pump
- EGR exhaust gas recirculation system
- Ignition advance system

COMPETENCY 14. Describe Careers in the Automotive Industry

SPECIFICATION

The student will be able to describe a minimum of two careers related to the automotive industry. The student's descriptions must include the following information for each career discussed:

- Job duties
- Working conditions
- Approximate salary
- Preparation needed for entry-level employment
- Sources of advanced training

ELECTRONICS

SPECIFICATIONS FOR CERTIFYING

ELECTRONICS COMPETENCIES

Students who have successfully completed Electronics 1-2 will be able to demonstrate competence in 8 of the following areas. Students who successfully complete Electronics 1-4 will be able to demonstrate competence in 12 of the following areas. Students may be certified competent after completing instructional units and projects or by completing the tasks listed within the specification statements following such competency statement.

COMPETENCY 1. Making Printed Boards

SPECIFICATION Given a piece of copper clad board, plating resist, appropriate applicators and a simple diagram, the student will be able to design a circuit, lay it out on the board, etch it and prepare it for assembling within three class periods.

COMPETENCY 2. Soldering

SPECIFICATION Given a 30-watt soldering iron, variac, file, long nose pliers, diagonals, 60/40 rosin core solder, wire, terminals and a prepared P.C. board, the student will be able to perform the following operations within two class periods:

- Inspect the iron and cord for safety hazards and identify any hazards found
- Heat the iron to an appropriate temperature
- File and tin the iron if it is needed
- Strip solid or stranded wire without nicking the conductor and make satisfactory soldered connections as required by instructor

COMPETENCY 3. Use of the Resistor Color Code

SPECIFICATION Given 10 resistors having a standard 4-band color code, the student will be able to list the nominal value and tolerance for each resistor correctly without the use of other aids, with 100% accuracy, within one class period.

COMPETENCY 4. Measuring Resistance With a VOM or VTVM

SPECIFICATION Given five resistors and a VOM or VTVM, the student will zero the instrument, measure the resistors on the most accurate scale and interpret the reading correctly, within 10 minutes.

COMPETENCY 5. Measuring AC and DC Voltage With a VOM

SPECIFICATION Given a VOM and unknown AC and DC voltage sources, the student will make appropriate function and range switch selections to measure the voltages on the most accurate scale and will interpret the readings correctly, within 10 minutes.

COMPETENCY 6. Measuring AC and DC Voltage With a VTVM

SPECIFICATION Given a VTVM and unknown AC and DC voltage sources, the student will make appropriate function and range switch selections, zero the instrument, measure the voltages on the most accurate scale and interpret the reading correctly, within 10 minutes.

COMPETENCY 7. Reading Schematic Diagrams

SPECIFICATION Given a schematic diagram of a radio, the student will identify the symbols of all components with an accuracy of at least 90%. He/she will also identify the following sections of the circuit: RF amplifier, converter, IF amplifier, audio amplifier and power supply, with an accuracy of 90%, within one class period.

COMPETENCY 8. Identification of Fasteners

SPECIFICATION Given samples of fasteners, the student will list them and indicate their appropriate use with an accuracy of 90%, within 30 minutes.

COMPETENCY 9. Identifying Kinds of Wire Used in Electronics and Determining Gauge Number and Diameter of Wire

SPECIFICATION Given the following wire samples, the student will correctly identify the wires, with 100% accuracy, and determine the gauge number and diameter using an American Wire Gauge, within 15 minutes.

Suggested wire types: Magnet, solid hook up, stranded hook up, AC appliance cord.

COMPETENCY 10. Testing Electrolytic, Mini-lytic, Paper and Mylar Capacitors for Leakage

SPECIFICATION Given four capacitors, the student will test the capacitors for leakage using a laboratory type capacitor tester, within 30 minutes.

Capacitor types: Electrolytic, mini-lytic, paper and mylar.

COMPETENCY 11. Construction of a Sheet Metal Chassis for an Electronic Project

SPECIFICATION Given a plan for a chassis, the student will layout the design on the sheet metal, cut out the metal and fold the metal into shape using a bar folder and a box and pan brake. The final shape of the box will be within 1/8" of the specified dimensions (height, width and length). The chassis should be completed within three class periods.

COMPETENCY 12. Testing Solid State Diodes

SPECIFICATION Given a solid state diode, the student will determine the quality of the diode by measuring the forward and the reverse resistance of the diode with a VOM, with 100% accuracy, within 10 minutes.

COMPETENCY 13. Measuring Peak to Peak Voltage on an Oscilloscope

SPECIFICATION Given an electronics series circuit powered by AC, the student will measure peak to peak voltage drops across the resistive elements using a lab type oscilloscope. The peak to peak measurements will then be converted to RMS voltage mathematically. The activity should be completed within one class period.

COMPETENCY 14. Testing Transistors With a VOM

SPECIFICATION Given an assortment of low power and power transistors, the student will be able to test the quality of the transistors with a VOM and also determine if they are NPN or PNP transistors, with 100% accuracy, within 30 minutes.

COMPETENCY 15. Explaining Electronic Circuit Functions

SPECIFICATION Given circuit diagrams of a solid state rectifier circuit, a transistor amplifier circuit, and an oscillator circuit, the student will be able to identify each of them and list their functions within one class period.

COMPETENCY 16. Testing Transformers

SPECIFICATION Given a transformer, the student will be able to perform an open test and a shorts test with a VOM or VTVM, within 30 minutes.

METALS

SPECIFICATIONS FOR CERTIFYING

METALS COMPETENCIES

Students who have successfully completed Metals 1-2 will be able to demonstrate competence in 12 of the following areas. Students who successfully complete Metals 1-4 will be able to demonstrate competence in 18 of the following areas. Students may be certified competent after completing instructional units and projects or by completing the tasks listed within the specification statements following such competency statement.

COMPETENCY 1. Identify the Kinds of Metals Used in the Metals Class

SPECIFICATION Given a sample of the following metals that are commonly used in the metals industry, the student will correctly identify five of the following six types and shapes:

- Aluminum
- Brass
- Copper
- Galvanized iron
- Steel hot rolled
- Steel cold rolled

COMPETENCY 2. Perform Precision Measurement

SPECIFICATION Given a metric scale, a micrometer caliper and two metal samples, the student will be able to measure a given sample to within $\pm$ 1mm with the ruler and $\pm$ .002 with the micrometer caliper.

COMPETENCY 3. Draw and Read Plans

SPECIFICATION Given the plans and/or a picture of a metal tool box, the student will be able to read the plans and produce his own working sketch of the box within one class period.

COMPETENCY 4. Make a Bill of Materials

SPECIFICATION Given a dimensional sketch or production drawing of a project, such as a simple wrought iron coffee table and a metals price list, including the required fasteners, the student will develop a bill of materials for the project within one class period. Both the metals list and the total cost will be 90% accurate.

COMPETENCY 5. Be Aware of Career Opportunities in the Metalworking Industries

SPECIFICATION The student will be able to describe two metalworking related occupations. The student's description should include the elements for each occupation:

(continued)

5. (continued)

- Job title
- Brief description of duties
- Where these craftspersons are employed
- Hours worked
- Approximate salary
- Entry-level skills

COMPETENCY 6. Identify Sheet Metal Hand Tools by Name and Use

SPECIFICATION The student will name, with 70% accuracy, the hand tools listed below. In addition, the student will choose two tools and the examiner will choose two tools which the student shall use to demonstrate proper technique. The demonstrations should be completed within 20 minutes.

- Ball peen hammer
- Blowhorn stake
- Center punch
- Circumference rule
- Combination square
- Dividers
- Flat cold chisel
- Hacksaw
- Hand groover
- Prick punch
- Rivet set
- Scriber
- Sheet metal gage
- Straight snips

COMPETENCY 7. Identify Sheet Metal Machines by Name and Use

SPECIFICATION The student will name, with 70% accuracy, the machines listed below. In addition, the student will choose one machine and the examiner will choose one machine with which the student shall briefly demonstrate proper use. The demonstration should be completed within 30 minutes.

- Bar folder
- Cornice and/or box and pan brake
- Ring and circle shear
- Rotary machine with beading, crimping, wiring, burring, and turning rolls
- Slip-roll forming machine
- Squaring shear
- Spot welder

COMPETENCY 8. Be Able to Use Several Sheet Metal Fasteners

SPECIFICATION

Given some prepared samples of sheet metal such as a piece 2" x 6" (50mm x 150mm), the student will demonstrate his ability to join two pieces of sheet metal with the appropriate fastener(s) using any four of the following seven methods within one class period.

- Grooved lock seam
- Hard solder
- Machine bolts
- Machine screws
- Rivets
- Sheet metal screws
- Soft solder

COMPETENCY 9. Identify Bench Metal Hand Tools by Name and Use

SPECIFICATION

The student will name, with 70% accuracy, the hand tools listed below. In addition, the student will choose two tools and the examiner will choose two tools with which the student shall briefly demonstrate proper use within 15 minutes.

- Combination square
- Counter sink
- Die and handle
- Drill gage
- Flat single cut file
- Adjustable wrench
- Rawhide mallet
- Reamer
- Tap and handle
- Twist drill

COMPETENCY 10. Be Able to Cut Threads in Metal Using Hand Taps and Dies

SPECIFICATION

Part I

Given a sample of metal such as a block of 2" x 2" x 1/2" (50mm x 50mm x 12mm) mild steel, the student will select the proper drill, drill a hole and tap internal threads for a 1/2" x 13 (12mm x 1.75mm) bolt within one class period. The student may use a tap and drill size chart as reference.

Part II

Given a 1/2" (12mm) diameter rod 6" (150mm) long, the student will select a die and cut external threads a distance of 1" (25mm) on the rod to fit the hole drilled and tapped in Part I. The student will perform this task within one class period. The examiner will determine if the parts fit properly for certification.

COMPETENCY 11. Selection and Use of Materials for Polishing Metals

SPECIFICATION

Given a metal object to be polished the student will select from the list of polishing materials below the proper compound to use from start to finish in order to bring out the beauty and best quality of the metal.

- White compound
- Emery compound
- Tripoli
- Rubbing compound
- Rouge

COMPETENCY 12. Be Able to Use a Power Hacksaw and a Hand Hacksaw

SPECIFICATION

Part I

Given a piece of cold rolled steel such as a piece 1/2" thick x 2" wide and long enough to safely install in a power saw (12mm x 50mm x 200mm), the student will mark with a scriber a 2" (50mm) length, properly mount the stock in the saw, start and cut the material within 20 minutes.

Part II

Using the 2" (50mm) piece of stock cut in Part I, the student will scribe a line 1" (25mm) from the cut end, mount it into a bench vise, select and install a hacksaw blade in the saw and cut the piece in half within 15 minutes.

COMPETENCY 13. Filing Metals to a Smooth Flat Surface

SPECIFICATION

Using a piece of mild steel stock, the student will demonstrate his ability to (1) rough file to a near finish, and (2) draw file to a smooth flat surface within one class period.

COMPETENCY 14. Be Able to Set Up a Lathe for Center Drilling, Facing, and Turning

SPECIFICATION

Given a prepared sample such as a piece of rough cut cold rolled round stock 1-1/2"D (35mm) x 6" (150mm) long, the student will set up the lathe, face both ends, center drill one end and, using the tailstock and a center for support, turn four inches of the material down to a given diameter $\pm$ .005 or $\pm$ .13mm within one class period.

COMPETENCY 15. Be Able to Cut Threads Using the Lathe

SPECIFICATION

Given a piece of round cold rolled steel, the student will set up the lathe, install the proper cutting tool, and cut a standard thread. The examiner will determine if a nut fits onto the threads properly before certification.

COMPETENCY 16. Identify Machines Used in a Machine Shop

SPECIFICATION The student will name, with 80% accuracy, the machines listed below. In addition, the student will demonstrate the safe operation of two machines, one of his own choosing and one of the examiner's choice. The demonstrations will be consistent with classroom and textbook instructions for machine operation.

- Band saw--vertical and/or horizontal
- Drill press
- Grinder
- Milling machine
- Lathe

COMPETENCY 17. Perform Oxyacetylene Welding

SPECIFICATION Given four pieces of mild steel, the student will set up the torch, make all necessary adjustments, and perform (1) a butt weld using a filler rod, and (2) a bronze butt weld. The two welds must be completed in one class period. The student may be certified competent if the welds withstand the bend test given by the examiner.

COMPETENCY 18. Perform MIG or TIG Welding

SPECIFICATION Given two pieces of mild steel, the student will set up the steel, make the necessary adjustments on the machine, and run an appearance bead within one class period. The student sample must meet industry standards.

COMPETENCY 19. Perform Spot Welding

SPECIFICATION Given two pieces of mild steel, the student will adjust the machine for regulating the heat and time, and perform five spot welds each 1" (25mm) apart within 15 minutes. The student may be certified competent if the weld withstands the test given by the examiner.

COMPETENCY 20. Perform Arc Welding

SPECIFICATION Given two pieces of mild steel plate, the student will: (1) grind a V bevel on one side of both pieces, (2) set and adjust the machine for the proper ampere and polarity, (3) using the AWS (American Welding Society) chart, select the electrode for the job, and (4) insert the electrode in the holder, strike an arc and weld the two pieces together within 45 minutes. The student may be certified competent if the weld withstands the test given by the examiner.

COMPETENCY 21. Be Able to Heat Treat Metals

SPECIFICATION Given a piece of tool steel that has recently been formed, the student will harden and temper the tool within one class period. The student will be certified competent by the examiner if the tool performs its function.

COMPETENCY 22. Identify Foundry Tools by Name and Use

SPECIFICATION The student will name, with 70% accuracy, the hand tools listed below. In addition, the student will choose two tools and the examiner will choose two tools. Using the tools selected, the student will demonstrate the safe working techniques for working with foundry tools. The processes used will be consistent with textbooks and classroom instructions for foundry tools.

- Flasks
- Crucible
- Parting compound
- Flux
- Foundry riddle
- Ingot mold
- Crucible tongs
- Pyrometer
- Sprue cutter
- Bench rammer
- Slick and Oval spoon
- Strike off bar

COMPETENCY 23. Be Able to Forge Metal

SPECIFICATION Given material such as three lengths of 1/2" (12mm) square hot-rolled steel, the student will demonstrate how to draw out material, taper material and make a scroll. The samples must be completed within two class periods.

COMPETENCY 24. Perform Sand Casting

SPECIFICATION The student will select a simple pattern, make the necessary setup, with the help of another student, pour molten metal into the cavity and then finish and remove the project within two class periods. The examiner will determine if the casting is acceptable as a finished product.

RESIDENTIAL PLANNING

SPECIFICATIONS FOR CERTIFYING
RESIDENTIAL PLANNING COMPETENCIES

Students who have successfully completed Residential Planning and Design 1 and 2 will be able to demonstrate competence in a minimum of nine of the following areas. Students may be certified competent in specific competency items at the completion of units of classroom instruction or upon completion of the tasks included in the specification statements following each competency statement.

COMPETENCY 1. Demonstrate Proper Use and Care of Drafting Equipment

SPECIFICATION Given a drafting machine or T square and triangles, paper, drafting pencils, eraser, and templates, the student will be able to demonstrate and explain the following:

- The use of drafting equipment to establish spacing for a house plan.
- The use of templates and equipment to draw circles, angles, vertical lines, horizontal lines and architectural symbols.
- Explain the care of drafting equipment.

COMPETENCY 2. Sketch a Functional Floor Plan

SPECIFICATION Given a pencil, eraser and graph paper, the student will be able to produce a proportional sketch of a residence floor plan. The floor plan must conform to F.H.A., Uniform Building Code, or equivalent specifications. The student will be given 30 minutes of class time to develop the proportional sketch.

COMPETENCY 3. Identify General Architectural Styles

SPECIFICATION Given pictures or front elevation drawings illustrating the following architectural styles, the student will orally identify 7 of 10:

- Ranch
- Victorian
- English Tudor
- Colonial
- Southern Colonial
- Cape Cod
- Spanish
- Modern
- A-Frame
- Geodesic

COMPETENCY 4. Estimate the Cost of a Residence From a Set of Plans

SPECIFICATION The student will be able to calculate a formula for the cost of a residence by using:

- Cost of lot
- Cost per square foot of building, using current area building trends

4. (cont.)

The student's estimate will take into account unusual features which may increase or decrease the total cost of the structure.

COMPETENCY 5. Describe Careers in the Field of Residential Architecture

SPECIFICATION The student will be able to describe, in writing, at least five careers connected with the residential construction industry. The description should include the following information about two of the careers:

- Job duties
- Working conditions
- Approximate salary
- Preparation needed for entry-level employment
- Sources of advanced training

COMPETENCY 6. Describe How Environmental Factors Should Affect the Design of the Structure

SPECIFICATION The student will describe orally and with proportional sketches of a plot plan and floor plan how the following environmental factors should be considered in designing a residence:

- View
- Lot shape
- Lot gradient
- North orientation
- Wind direction
- Availability of utilities
- Traffic

COMPETENCY 7. Describe Factors Involved in Designing Functional Traffic Patterns for Residences

SPECIFICATION Student descriptions should include the majority of the following factors:

- Traffic should not flow through a conversation area to get to another room.
- Traffic should not need to go through one room in order to get to another room.
- Houses with central hall plans have more functional traffic patterns than those without central halls.
- Traffic should be able to flow into one of the three main areas without passing through the two other main areas.

7. (cont.)

- The residence design should allow for individual privacy.
- Traffic patterns within rooms should not interfere with the main purpose of the room.

COMPETENCY 8. Kitchen Design

SPECIFICATION

The student will be able to design a functional kitchen based upon a work triangle with a perimeter of from 12 to 22 feet. The kitchen may be any of the following shapes:

- Island
- Pullman
- Peninsula
- L Shape
- U Shape
- Single Wall

The efficiency of the kitchen should not be impaired by being in a major traffic pattern.

COMPETENCY 9. Knowledge of Local Building and Planning Codes

SPECIFICATION

The student will be able to list local sources of information about zoning laws, building codes, building permits, and building inspections.

Typical sources of information include city and county planning departments, city and county building inspection departments.

Types of codes may include local city codes, F.H.A. building code and the Uniform Building Code.

COMPETENCY 10. Knowledge of Residential Living Styles

SPECIFICATION

The student will be able to list five advantages for living in each of the following types of residence:

- Single family residence
- Condominium
- Town house
- Mobile home
- Apartment complex

Advantages listed by the student should include:

- Single family: Privacy, tax advantages, ownership of all property, larger lots, owner can make major changes, owner can perform his own maintenance.

10. (cont.)

- Condominium: Tax advantages, recreation facilities, social facilities, security, individualized decorating, small square-footage.
- Town house: Owner can have a personal lawn and garden, privacy, tax advantages, lower exterior maintenance costs, recreational facilities.
- Mobile home: Lower initial cost, recreational and social facilities, low maintenance costs, security, individual decorating and personal garden area.
- Apartment: Recreation facilities, social facilities, security, adult education resources, no maintenance costs to occupant.

COMPETENCY 11. Knowledge of Architectural Symbols

SPECIFICATION The student will correctly identify 20 of the following 26 symbols:

- telephone outlet
- ceiling fixture
- fluorescent fixture
- light switch
- furnace
- insulation
- fireplace
- window
- door
- concrete
- electrical outlet
- wall fixture
- bath tub
- shower
- toilet
- sink
- refrigerator
- water heater
- range
- dishwasher
- trash compactor
- soil
- sills
- wood
- brick
- steel

COMPETENCY 12. Produce a Functional Plan for a Single Family Residence

SPECIFICATION The student may be certified competent after satisfactory completion of the class unit requirement for a set of residence plans or by completing the following tasks. The student will use a set of specifications to produce the single family residence plans and schedules listed below:

- Plot plan
- Foundation plan
- Window schedule
- Floor plan
- Front and Rear elevations
- Side elevations
- Door schedule
- Framing section

TECHNICAL DRAWING

SPECIFICATIONS FOR CERTIFYING

TECHNICAL DRAWING COMPETENCIES

Students who have successfully completed Technical Drawing 1-2 will be able to demonstrate competence in a minimum of 10 of the following areas. Students who have successfully completed Technical Drawing 1-4 will be able to demonstrate competence in all of the following areas. Students may be certified competent in specific competency items at the completion of units of classroom instruction or upon completion of the tasks included in the specification statements following each competency statement.

COMPETENCY 1. Demonstrate Proper Use and Care of Drafting Equipment

SPECIFICATION

Given a drafting machine, paper, drafting pencils, compass, templates, dividers, and a dimensioned sketch of a rectangular object with a centered hole, the student will be able to demonstrate and explain the following in accordance with the text in use:

- Use of the drafting machine and scales to establish spacing for the object, a center line and object lines for a single view of the object to be drawn.
- Use of the indexing head of the drafting machine to draw angles, vertical and horizontal lines, and explain care of the machine and scales.
- Use and care of dividers and compasses. The demonstration should include adjustment, setting the compass for a radius and how to hold the compass at the top and rotate it for circles. The divider demonstration should include setting the dividers, holding the dividers at the top to step off equal distances and transferring distances from one place to another.

COMPETENCY 2. Sketch Proportionate Freehand Drawings

SPECIFICATION

Given a written description of a 2" x 2" x 3" (50mm x 50mm x 76mm) rectangular block with a 3/4"D (19mm) centered hole and one corner cut at a 45° angle, the student will be able to produce a proportional pictorial or multi-view freehand drawing within five minutes. Graph paper may be used. The following process should be observed:

- The student will select a soft lead pencil.
- Mark starting and ending points of the rectangle.
- Sketch light construction lines left to right and darken object lines.
- Sketch vertical construction lines, darken object lines.
- Sketch the hole center line, mark the radius, sketch circle through points and darken.
- Mark corner 45°, sketch and darken object lines.

COMPETENCY 3. Use Basic Principles of Single Stroke Lettering

SPECIFICATION Given a two-line technical note containing letters, numerals and fractions, the student will select the proper pencil, use a drafting machine or lettering guide to draw very light 1/8" (3mm) lettering guidelines and use single stroke vertical Gothic capital letters to complete the note within 15 minutes.

COMPETENCY 4. Draw Conventional Views of Objects (Orthographic)

SPECIFICATION Given a dimensioned isometric projection of a 2" x 2" x 3" (50mm x 50mm x 76mm) rectangular block with a 3/4"D (19mm) centered hole and one corner cut at a 45° angle, the student will be able to produce a three-view drawing done in third angle projection within 45 minutes. The spacing on the paper and between views will follow the local practice (usually 1" (25mm) between views). The height, width, depth, and locations of major features in each view will be accurate to within $\pm$ 1/32" or $\pm$ 2mm. The unidirectional dimensioning system will be used.

COMPETENCY 5. Demonstrate the Proper Use of Lines in Drawings

SPECIFICATION The orthographic projection problem required in Competency 4 may be used to determine proper use of lines.

All visible lines, hidden lines, center lines, dimension and extension lines used in the drawing will be of the currect thickness and reflect the code of lines specified in the drafting text.

COMPETENCY 6. Perform Customary Linear Measurement

SPECIFICATION The student will use a drafting machine with scales in a customary measurement system to produce the following lines with 90% accuracy:

- Lines of the following lengths in full, 1/2, 3/8 and 1/4 scale: 2", 3-3/8", 5-11/16", 6-7/8" and 7-1/4".

COMPETENCY 7. Perform Metric Linear Measurement

SPECIFICATION The student will use a drafting machine with scales in a metric measurement system to produce the following lines with 90% accuracy:

- Lines of the following lengths in 1.1, 1.2, 1.25 and 1.5 scale: 60mm, 80.5mm, 155mm, 200mm and 285mm.

COMPETENCY 8. Perform Geometric Construction

SPECIFICATION

Given a dimensioned sketch or drawing of an object such as the conveyer link in the district Introduction to Drafting booklet, page 21, the student will be able to produce a full-scale single-view drawing within 90 minutes.

The student will demonstrate the correct processes to:

- Locate center lines on paper.
- Draw center lines.
- Draw arcs.
- Draw connecting straight lines and arcs.
- Locate centers and points of tangency.
- Draw tangent arcs.
- Darken all visible lines.

The geometric drawing need not be dimensioned. All lines must follow drafting conventions for width, darkness and code symbols.

COMPETENCY 9. Demonstrate the Proper Use of Customary and Metric Dimensioning Practices

SPECIFICATION

Given two drawings without dimensions such as those required for the orthographic competency unit, the student will follow the drafting conventions contained in the drafting text to produce a drawing with customary dimensions and a drawing with metric dimensions. Elements which must be included are:

- The unidirectional dimensioning system shall be used.
- Proper line width for extension, dimension and leader lines.
- Filled or open arrow heads at both ends of the dimension lines except for radius dimensions.
- Conventions for limited space shall be observed.
- Extension lines must have 1/16" (customary) or 2mm (metric) gap.
- Dimension lines may not cross each other and should be correctly spaced from the object and other dimension lines.
- Center lines may not be used as dimension lines.

COMPETENCY 10. Make Pictorial Drawings

SPECIFICATION

The student may choose to complete an isometric, oblique or one point perspective drawing, such as the holder on page 31 of the Introduction to Metrics in Technical Drawing booklet. The drawing must be completed within 90 minutes.

Conventions to be observed are:

Isometric

- The object must be centered on the paper.
- The 30° isometric axis must be evident.
- All isometric lines must be shown true length.
- The student should be able to state without hesitation that isometric circles are ellipses.
- That non-isometric lines are not true length lines and may not be used for measurements.

Oblique (cabinet)

- All vertical and horizontal axes are at 90° to each other.
- The depth dimensions are shortened by one-half to improve appearance.
- Height and width dimensions are true size.
- Circles are usually presented in the front surface and are drawn as true circles.

One Point Perspective

- Perspective projections utilize a horizon line and vanishing point to extend the depth dimension so that either top and side or bottom and side are shown.
- All edges other than those in the front view go to the vanishing point.
- The student should be able to state that only the lines on the picture plane are shown true length.
- The student should be able to show where he/she established the horizon and vanishing point.

All normal drafting conventions for layout, spacing and the alphabet of lines apply to this performance task.

COMPETENCY 11. Draw Auxiliary Views

SPECIFICATION

Given a dimensioned isometric view of a simple object with an inclined surface not parallel to any of the normal planes of projection, the student will, using the appropriate drafting tools, produce an auxiliary view projected perpendicular from the inclined surface. The auxiliary projection will show two dimensions and surface features in their true sizes and shapes to within ± 1/32" or ± 1mm. Line quality and symbols will follow the drafting standards for Technical Drawing 1-2. The auxiliary view must be completed within 90 minutes.

COMPETENCY 12. Draw Sectional Views

SPECIFICATION

Given a problem such as those on page 105 in Spencer*, the student, using the appropriate drafting instruments, will produce an appropriate front view with the cutting plane line passing through the major features to mark off a full section or offset section.

The following conventions should be followed:

- The full or offset section is cut all the way through the object.
- The cutting plane line should be clearly evident.
- Section lines should never be parallel with an edge of the cut out section and should be correctly spaced.
- Where separate pieces of the item are fastened or meet, section lines will change directions to show that there are separate parts.
- Hidden lines are seldom shown on the sectioned view.
- All normal conventions of line size, quality and symbol apply.

The section problem should be completed within 90 minutes.

COMPETENCY 13. Produce Sheet Metal Development

SPECIFICATION

Given a dimensioned sketch or single view drawing such as a round heating duct with a 90° intersection, the student will be able to lay out a pattern for pipes meeting at that angle.

The completed pattern will be considered satisfactory if the circumference set off with dividers is ± 1/16" or ± 2mm of the true circumference, and that the patterns when cut out can be fitted together to produce a cylinder with a 90° corner.

The project must be completed within two class periods.

*Basic Technical Drawing, Henry C. Spencer

COMPETENCY 14. Operate Reproduction Machine

SPECIFICATION

Given a drawing on vellum, tracing paper, or polyester film, which is capable of producing industrial quality white prints, the student will be able to use the white printer found in the drafting room to produce a line print which could be used by a machinist or other craftsperson to make the item.

COMPETENCY 15. Produce Ink Drawings

SPECIFICATION

The student may select any of the drawings he/she produced for the sections on orthographic, pictorial, dimensioning or geometric construction to produce a drawing in black drafter's ink. As equipment, the student may use the assortment of technical fountain pens, an inking compass or the traditional bow pens used for producing inked lines of various sizes.

The inked drawing must conform to the alphabet of lines and all specifications for dimensioning, code symbols and the hand lettering of notes and title blocks. No mechanical lettering devices or templates may be used.

The work must be completed within 90 minutes. It must be free of blots and of a quality which will make satisfactory Diazo prints.

COMPETENCY 16. Describe Careers in the Drafting Industry

SPECIFICATION

The student will be able to describe at least two careers connected with the drafting industry. The student's written or oral description must contain the following information about each career:

- Job duties
- Working conditions
- Approximate salary
- Preparation needed for entry-level employment
- Sources of advanced training

WOODS

SPECIFICATIONS FOR CERTIFYING

WOODS COMPETENCIES

Students who have successfully completed Woods 1-2 will be able to demonstrate competence in 10 of the following areas. Students who have successfully completed Woods 1-4 will be able to demonstrate competence in 15 of the following areas. Students may be certified competent by the teacher upon successful completion of instructional units, activity projects, or upon the students' successful completion of the tasks included in the specification statement following a particular competency statement.

COMPETENCY 1. Identify the Kinds of Woods and Wood Products Used in Woods Classes

SPECIFICATION Given 36 square inch or larger surfaced samples such as the following woods and wood products, the student will correctly identify 70%:

Solid Woods	Plywood and Wood Products
- Ash	- Douglas fir plywood
- Birch	- Mahogany plywood
- Mahogany	- Particle (chip) board
- Oak	- Tempered hardboard
- Pine	
- Redwood	
- Teak	
- Walnut	

COMPETENCY 2. Make a Bill of Materials

SPECIFICATION Given a dimensioned sketch or production drawing of a simple object, such as a Swedish modern coffee table and a materials price list, including the various fasteners available, the student will develop a bill of materials for the object. Both the materials list and the total cost will be at least 70% accurate.

COMPETENCY 3. Identify Hand Tools by Name and Use

SPECIFICATION The student will name, with 70% accuracy, hand tools such as those listed below. In addition, the student will choose two tools and the examiner will choose two tools which the student shall use to demonstrate proper use.

- Block plane	- Try square
- Jack plane	- Marking gauge
- Chisel	- Back saw
- Gouge	- Crosscut saw
- Doweling jig	- Rip saw
- Miter box	- Coping saw

COMPETENCY 4. Be Able to Use Several Adhesives

SPECIFICATION

The student will name two of the following adhesives and accurately describe the conditions which call for the use of the more special purpose types of adhesives.

Common Adhesives	Common Uses
- Polyvinyl (white glue)	For most interior jobs
- Resins (urea-formaldehyde)	Water-resistant exterior or marine
- Contact cement	Apply plastic laminates
- Resorcinol	Severe duty water resistant
- Epoxy	Laminates and where clamping is difficult
- Aliphatic resin	For most interior work

The student's description, either by common brand name, i.e., Elmer's White Glue, Carpenter's Glue or Polyvinyl, should include its common use, need for clamping pressures and, if appropriate, the limitations of the adhesive.

COMPETENCY 5. Use Correct Procedures for Squaring Stock

SPECIFICATION

Students, after completion of two semesters of woods, shall be able to demonstrate how to square stock using hand tools, machine tools or a combination of hand and machine processes. The test sample must be squared to within $\pm$ 1/32" or $\pm$ 2mm of being the correct length and width and for squareness at each of the corners.

COMPETENCY 6. Construction of Common Wood Joints

SPECIFICATION

The student will be able to name, from a drawing, samples, or pictures, 70% of the examples. In addition, the student must correctly construct two common wood joints, one joint to be chosen by the student and one sample to be chosen by the examiner.

The joints to be submitted must be of sufficient accuracy that they could be used as part of a drawer, chair, picture frame, etc.

Wood joints such as the following may be used to fulfill requirements:

- 45° miter
- 45° splined miter
- half lap
- cross lap
- dovetail
- mortise and tenon
- dowel
- rabbet
- dado
- box

COMPETENCY 7. Selection and Use of Abrasives

SPECIFICATION

Given a 3/4" x 5" x 12" (20mm x 130mm x 300mm) or larger piece of solid wood, the student will select the equipment and abrasives, and prepare the face, edge and end grain to be stained and finished. Students may elect to use all hand processes, machine processes, or a combination of both.

COMPETENCY 8. Selection and Application of Wood Finishes

SPECIFICATION

Part I

Given the following list of available finishing materials and asked to describe an appropriate finish for an outdoor porch swing made of oak, a Danish walnut coffee table and a birch veneer chest of drawers, the student will choose an appropriate finish for each item.

- Penetrating oil finish
- Polyurethane finish
- Lacquer
- Enamel
- Latex based paint
- Spar varnish
- Deft

Part II

The student shall use the sample of wood from the abrasives competency test or a prepared sample to produce a finish of saleable quality. A variety of finishes should be available for student selection.

COMPETENCY 9. Description of Career Opportunities in the Woodworking Industries

SPECIFICATION

The student will be able to describe two woodworking related occupations. The student's description should include the following elements for each occupation:

- Job title
- Brief description of duties
- Hours worked
- Approximate salary
- Entry-level skills required
- Where to obtain further training

COMPETENCY 10. Demonstrate the Safe Use of the Table Saw

SPECIFICATION

The student will demonstrate the proper setup and operating procedures necessary to perform the following operations on a table saw:

- Crosscut to within ± 1/32" or ± 2mm of a specified length
- Rip to within ± 1/32" or ± 2mm of a specified width
- Miter to within ± 1° of a 45° angle
- Dado to within 1/16" or 2mm of a specified depth and width

The student must use the miter gage or sliding table, rip fence, guard, saw blades and dado cutters in ways consistent with class instructions and demonstrations.

COMPETENCY 11. Demonstrate Safe Use of the Band Saw

SPECIFICATION

The student will correctly demonstrate three of the following band saw operations:

- Free hand cut an irregular curve (relief cuts should be made where appropriate)
- Free hand cut a circle (several relief cuts may be needed)
- Resaw a board into two strips of approximately equal thickness
- Tilt the saw table to crosscut two 22-1/2° cuts to make a 45° angle
- Change blades and adjust guides as necessary

Adjustment of the machine, upper blade guide, direction of feed, and table tilt adjustment will be consistent with class instructions and demonstrations.

COMPETENCY 12. Demonstrate the Safe Use of the Jointer

SPECIFICATION

The student will demonstrate the proper procedures to set up the jointer to perform two of the following operations:

- Joint a face
- Joint an edge
- Joint end grain
- Bevel an edge
- Chamfer an edge

The adjustments of the depth of cut, direction of feed of the stock, use of the fence and use of the guard will be consistent with class instructions and demonstrations.

COMPETENCY 13. Demonstrate the Correct Use of the Planer or Surfacer

SPECIFICATION

The student will demonstrate the correct process for surfacing stock to a specified thickness. In demonstrating the correct process, the following should be observed:

- The jointer should be used to surface the first face of the stock
- The stock should be measured for thickness and the planer depth of cut set for not more than 1/8" (3mm)
- The stock should be placed on the infeed table rough side up
- The operator should stand to the side of the surfacer while cutting is in process
- The finished stock should be within 1/32" (1mm) of the specified size

COMPETENCY 14. Demonstrate the Procedures for Use of the Wood Lathe

SPECIFICATION

The student will be able to prepare blocks of wood for turning between centers and/or turning with a faceplate on a wood lathe and to demonstrate either faceplate or between-centers turning.

A between-centers demonstration should include seating the live center, setting of the tool rest to clear the stock about 1/8" (3mm), rough turning with a gouge and turning with appropriate tools to a specified diameter.

A faceplate demonstration should include cutting the blank round, attaching the faceplate, rough turning the outside and using a round nose tool to scrape a recess in the face of the block to a specified depth.

The student's setups, choice of lathe speeds, tool selection and hand positions shall be consistent with class instructions and demonstrations.

COMPETENCY 15. Demonstrate Procedures for Use of the Drill Press

SPECIFICATION

The student will demonstrate the proper procedures for using the drill press with three different types of bits, such as the following:

- Twist drill
- Countersink
- Foerstner bit
- Multispur bit
- Planetor bit
- Spade or speedbore kit
- Hole saw
- Circle cutter

(continued)

15. (continued)

The student should use care to see that the bits are properly tightened in the drill chuck and the chuck key removed to a safe place.

COMPETENCY 16. Demonstrate the Correct Use of the Disc Sander

SPECIFICATION

The student will be able to use the disc sander to demonstrate the proper procedure to sand curves and to use the miter gage to sand to a line.

During the demonstration, the student's procedures will be consistent with class instructions and demonstrations.

COMPETENCY 17. Demonstrate the Correct Use of the Portable Router

SPECIFICATION

The student will use a portable router to demonstrate the correct bits and setups for edge routing with a guide, cutting a dado, and edge routing with a pilot bit.

The procedures followed must be consistent with class instructions and demonstrations.

COMPETENCY 18. Identify Portable Power Tools by Name and Use

SPECIFICATION

The student will name, with 100% accuracy, the portable power tools listed below. In addition, the student and the examiner will each choose one tool which the student will use to demonstrate proper use and describe proper care.

- Belt sander
- Pad or orbital sander
- Electric drill
- Circular saw
- Saber saw

GRAPHIC ARTS

SPECIFICATIONS FOR CERTIFYING

GRAPHIC ARTS COMPETENCIES

Students who have successfully completed Graphic Arts 1-2 will be able to demonstrate competence in 17 of the following areas. Students may be certified competent by the teacher upon successful completion of instructional units, activity projects, or upon the students' successful completion of the tasks included in the specification statement following a particular competency statement.

COMPETENCY 1. Demonstrate Safe Work Practices

SPECIFICATION

During each practical demonstration of a set-up and operation of one of the machines in the graphic arts lab, the student should follow a systematic process of inspection, testing of components, and cleaning, according to instructor's specifications.

The following elements should also be observed:

- Guards, shields and special protection will be used as needed (trimmer saw and molten metal)
- The student will remove loose clothing and restrain long hair
- Chemicals will be mixed and handled with care
- Hot molten metal will be handled with care

COMPETENCY 2. Identify Layout of California Job Case

SPECIFICATION

On a paper and pencil test, the student will be given a blank outline of the California Job Case and will be expected to fill in all compartments with 99% accuracy within 15 minutes.

COMPETENCY 3. Identify Printer's Units of Measurement

SPECIFICATION

Given a blank piece of paper and a pencil, the student will be able to draw and label the relationship between the spaces and quads with 100% accuracy within 15 minutes.

COMPETENCY 4. Be Able To Set and Justify a Line of Type

SPECIFICATION

Provided with a composing stick and a California Job Case, the student will be able to correctly set his/her name and justify the line of type with 100% accuracy within 15 minutes.

COMPETENCY 5. Be Able to Correctly Replace All Type Used in a Type Form in the California Job Case

SPECIFICATION Provided with several lines of type, a composing stick, and a California Job Case, the student will be able to correctly distribute the type without dropping any type, spaces or quads, and without any diagrams or charts of the case layout. The student must complete the task with 100% accuracy in 15 minutes.

COMPETENCY 6. Be Able to Lock Up a Type Form in a Given Chase

SPECIFICATION Given a form, either type or engraving block, the student will be able to select the proper method and the proper lock up for the form. Evaluation will be based on the instructor's picking up the chase to see that no part of the form is loose. The lock up should be completed in 5 minutes.

COMPETENCY 7. Demonstrate Correct Use of a Platen Press

SPECIFICATION Provided with a platen press and a properly locked up form, the student will be able to:

- Ink the press
- Set the pins
- Make ready
- Print 50 acceptable copies
- Clean the press

The above tasks should be completed within one class period.

COMPETENCY 8. Demonstrate Safe Use of the Rubber Stamp Press

SPECIFICATION Without the aid of references, the student will be able to write a one-page report covering the complete process of making a rubber stamp. Be sure to include all steps necessary in sequential order. The report should be finished within 20 minutes.

COMPETENCY 9. Demonstrate Proper Use of a Copy Camera

SPECIFICATION Provided with a darkroom and an original copy, the student will be able to adjust the camera to any given reduction or enlargement and produce an acceptable negative within 15 minutes.

COMPETENCY 10. Demonstrate Proper Production of a Line Negative

SPECIFICATION

Provided with a solid black-and-white original, the student will be able to:

- Set and operate the camera (enlarge or reduce image)
- Correctly develop the film. Black areas will be black enough to block out light when held up to a strong light source.

The operation should be completed within 20 minutes.

COMPETENCY 11. Demonstrate Proper Production of a Half Tone Negative

SPECIFICATION

Provided with a glossy photograph and proper half tone screen, the student will be able to:

- Set and operate camera (enlarge or reduce image)
- Produce a half tone negative

An acceptable negative will have dots throughout, even the clear parts of the negative. The operation should be completed within 15 minutes.

COMPETENCY 12. Demonstrate Proper Procedure Used in Opaquing

SPECIFICATION

Provided with a line photograph, the student will be able to apply opaque to the proper side of the negative. This procedure will be checked by holding the opaqued negative up to a strong light source and not finding one pin mark.

The procedure should be completed within 15 minutes.

COMPETENCY 13. Demonstrate Proper Procedure Used in Stripping Flats

SPECIFICATION

Given one or more negatives and one sheet of goldenrod paper, the student will be able to prepare the flat to the satisfaction of the instructor. When the flat is held to the light, the negative should be square to the paper and there should be no unnecessary openings through which light may pass.

The procedure should be completed within 15 minutes.

COMPETENCY 14. Demonstrate Correct Exposure and Development of an Offset Plate

SPECIFICATION

Provided with an exposure unit and the necessary chemicals, the student will develop any given offset plate. The student will then place the developed plate on a press and print 100 acceptable copies.

The operation should be completed within one class period.

COMPETENCY 15. Demonstrate Correct Stitching Procedure

SPECIFICATION Given a set of unstitched booklets, brochures or memo pads, the student will set up the stitcher and properly stitch the material provided. Each item should be stitched evenly, the staples well placed, and the machine adjusted to give proper bend over on the back. The finished products must be up to the standards established by the instructor.

This procedure should be completed within 15 minutes.

COMPETENCY 16. Demonstrate Proper Padding Procedure

SPECIFICATION Provided with a stack of loose sheets of paper, the student will be able to assemble the sheets neatly in the padding unit, apply pressure and bind the sheets together with padding compound. The bound paper will remain even on all sides and contain no loose sheets.

This procedure should be completed within 10 minutes.

COMPETENCY 17. Demonstrate Proper Screen Printing Techniques Using Photo-Film

SPECIFICATION Provided with a clean silk screen, positive image on a clear base, photo-film, A&B developer, and platemaking equipment, the student will be able to expose, develop, and adhere photo-film to a silk screen, within 20 minutes.

COMPETENCY 18. Demonstrate Proper Screen Printing Techniques Using Pro-Film

SPECIFICATION Provided with a piece of pro-film, a suitable design and a proper cutting tool(s), the student will be able to:

- Prepare a pro-film stencil
- Adhere it to a clean screen
- Mask the stencil properly
- Set the guides
- Run 25 clean copies
- Clean stencil and tools

This operation should be completed within two class periods.

COMPETENCY 19. Demonstrate Correct Use of an Offset Press

SPECIFICATION Provided with an offset press, a developed plate, ink, fountain solution, and paper, the student will be able to produce 100 acceptable copies. The student will further be able to explain the use and function of each control knob and other press parts with 90% accuracy, within one class period.

COMPETENCY 20. Demonstrate Correct Use of Linotype Keyboard

SPECIFICATION Provided with a live linotype keyboard and practice copy, the student will be able to properly adjust the machine and set the practice copy without looking at the keyboard, with 90% accuracy, within 15 minutes.

COMPETENCY 21. Demonstrate Correct Use of Photo Typesetting Equipment

SPECIFICATION Provided with copy, a photo typesetting machine, accompanying charts, a processor and proper width paper, the student will be able to set acceptable copy, according to specifications, within 15 minutes.

COMPETENCY 22. Be Aware of Career Opportunities in the Graphic Arts Industry

SPECIFICATION After an individual visit to a local print shop, the student will be able to describe career opportunities available to him/her in the local area. This written description will include:

- Job titles
- Tools and equipment used
- Approximate salary (entry and career)
- Entry-level skills required
- Working conditions
- Opportunities for advancement
- Sex bias